

1. A process for packaging perishable food items comprising the steps of:

(a) placing said food items in a package at least a portion of which is gas permeable; and

(b) adding an antimicrobial gas into said package at a level of from about 20% to about 100% of the atmosphere contained within the package;

wherein said package has a permeability such that the atmosphere in the package equilibrates with the atmospheric gas composition in about 1 to 7 days from the time the antimicrobial gas is added to the package, at from about 28°F to about 212°F.

2. The process according to claim 1 wherein the perishable food items are respiring produce.

3. The process according to claim 1 wherein the perishable food items are whole produce.

4. The process according to claim 1 wherein the perishable food items are fresh cut produce.

5. The process according to claim 1 wherein the perishable food items comprise low acid fruit.

6. The process according to claim 4 wherein the atmosphere in the package equilibrates with the atmospheric gas composition in from about 1 to 7 days at from about 32°F to about 50°F.

7. The process according to claim 5 wherein the low acid fruit is selected from watermelon, cantaloupe, honeydew, and mixtures thereof.

8. The process according to claim 6 wherein the initial concentration of the antimicrobial gas is from about 25% to about 100% of the atmosphere contained within the package.

9. The process according to claim 8 wherein the initial concentration of the antimicrobial gas is from about 30% to about 100% of the atmosphere contained within the package.
10. The process according to claim 9 wherein the antimicrobial gas is selected from carbon dioxide, chlorine oxide, ozone, nitrous oxide, carbon monoxide, ethanol, peroxide, and mixtures thereof.
11. The process according to claim 10 wherein the antimicrobial gas comprises carbon dioxide.
12. The process according to claim 11 wherein the final concentration of the antimicrobial gas after equilibration is no more than about 25% of the atmosphere contained within the package.
13. The process according to claim 12 wherein the final concentration of the antimicrobial gas is no more than about 20% of the atmosphere contained within the package.
14. The process according to claim 12 wherein the equilibration of the antimicrobial gas takes from about 1 to about 5 days.
15. The process according to claim 14 wherein the equilibration of the antimicrobial gas takes from about 2 to about 4 days.
16. The process according to claim 15 wherein the equilibration takes place at a temperature of from about 45 to about 46°F.
17. The process according to claim 13 wherein the initial concentration of carbon dioxide is about 75% of the atmosphere contained within the package, and said antimicrobial gas equilibrates to contain about 15% to about 20% carbon dioxide within about 2 to about 4 days.
18. The process according to claim 17 wherein the equilibration takes about 3 days.

19. The process according to claim 14 wherein the initial concentration of the antimicrobial gas is about 40% to about 100% of the atmosphere contained within the package.

20. The process according to claim 19 wherein the initial concentration of the antimicrobial gas is from about 50% to about 100% of the atmosphere contained within the package.

21. The process according to claim 6 wherein the antimicrobial gas is introduced into the package by vacuum back flush, injection, or permeation.

22. The process according to claim 6 wherein the produce is subjected to a sanitization step before being cut up.

23. The process according to claim 22 wherein the sanitization step is selected from irradiation, washing, antimicrobial dip and thermal sanitization of the produce, or a combination of such steps.

24. The process according to claim 6 wherein the equilibration of the atmosphere within the package is controlled by perforations in the packaging materials, gas permeability of the packaging materials, or a controlled atmosphere room or container within which the packages are stored.

25. The process according to claim 24 wherein the atmosphere equilibration is controlled by perforations in the packaging materials or gas permeability of the packaging materials.

26. The process according to claim 25 wherein the packaging materials are, in whole or in part, microporous, microperforated, or a combination of the two.

27. A package for holding fresh cut fruit during storage and transportation, at least a portion of which package is gas permeable, and which is structurally adapted to hold an initial level of antimicrobial gas of from about 30% to about 100% of the atmosphere contained within said package; and wherein said package permits the atmosphere in said package to equilibrate to no more than about 20% antimicrobial gas in from about 1 day to about 5 days at from about 28°F to about 212°F.

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28. The package according to claim 27 which permits the package atmosphere to equilibrate in from 1 to about 5 days at from about 32°F to about 50°F.
29. The package according to claim 28 wherein the antimicrobial gas is carbon dioxide.
30. The package according to claim 29 wherein the antimicrobial gas has an initial concentration of from about 50% to about 100% of the atmosphere contained within the package.
31. The package according to claim 30 made in whole or in part from polyvinylchloride, polystyrene, polyethylene terephthalate, and mixtures thereof.
32. The package according to claim 30 wherein the gas permeability of the package results from perforations within the packaging material or gas permeability of packaging material.